COURSE NUMBER: FHWA-NHI-131023
COURSE TITLE: Highway Materials Engineering

This course provides applied knowledge in highway engineering materials and quality control. Coverage includes:

1. Materials control and acceptance-quality assurance
2. Soil and foundations
3. Steels, welding, and coatings
4. Aggregates and unbound bases
5. Asphalt materials and paving mixtures
6. Portland cement concrete

OUTCOMES:

Upon completion of the course, participants will be able to:

- Identify and describe the characteristics and engineering properties of the materials utilized in highways
- Identify and describe the selection criteria and important design properties of highway materials
- Describe the important steps and considerations in the mix design procedures
- Demonstrate an understanding of materials quality assurance and be able to develop an effective materials acceptance plan
- Describe the field and laboratory testing procedures and the significance of test results, along with their relationship to laboratory designs
- Describe the issues and trends of importance to State DOT materials engineering personnel

TARGET AUDIENCE:

A prospective participant must have a solid academic background in mathematics and science. State DOT engineers who require a basic knowledge of highway materials. The typical participant will have an undergraduate degree in engineering or equivalent engineering experience in the highway field. These individuals typically will be staff professionals who either have been assigned or have the potential to be assigned to responsible positions in the highway materials field, such as district or regional materials engineer, or an engineer in the materials central office operations.

FEE: $5,100 Per Participant

LENGTH: 30.0 Days (CEU: 18.0 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Michael Rafalowski • (202) 366-1571 • michael.rafalowski@fhwa.dot.gov

Registering for this course requires submitting an application. For information on application requirements, please contact Michael Rafalowski at (202) 366-1571 or michael.rafalowski@fhwa.dot.gov.

COURSE NUMBER: FHWA-NHI-131026
COURSE TITLE: Pavement Subsurface Drainage Design

The course provides detailed information concerning pavement subsurface drainage design for new or reconstructed portland cement concrete (PCC) or asphalt concrete (AC) pavements and retrofit edge drains. This course teaches cost-effective design methods, including permeable bases and edge drains where appropriate to prevent or minimize moisture-related distress to pavements.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Evaluate the need for subsurface drainage systems for existing pavements or new pavement designs
- Design subsurface drainage systems for portland cement concrete and hot-mix asphalt pavements
- Explain the guidelines for developing plans and specifications for subsurface drainage systems
- Develop monitoring and maintenance programs for pavements with subsurface drainage systems

TARGET AUDIENCE:

The course is directed toward Federal, State, and local highway engineers, designers, and personnel involved in hydraulic design, materials control, pavements design, research, construction, and maintenance of pavement subsurface drainage systems.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Angel Correa • (404) 562-3907 • angel.correa@fhwa.dot.gov

Courses can be hosted by any transportation organization.
Instructions for hosting a course can be found on page 7.

COURSE NUMBER: FHWA-NHI-131032
COURSE TITLE: Hot-Mix Asphalt Construction

This training course is the result of a partnership between the American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA), and hot-mix asphalt (HMA) industry. It was developed through the cooperative efforts of the Joint AASHTO/FHWA/Industry Training Committee on Asphalt. It combines lectures and problem-solving workshop sessions to provide participants with a working knowledge of the hot-mix asphalt construction process and equipment. The course is designed to help participants understand the effect of construction actions on the final product. This program reviews the entire HMA construction process beginning with the delivery of the HMA to the job site, through lay down and compaction, and concluding with quality control/quality assurance (QC/QA) of the completed pavement. To emphasize recommended good practice in HMA construction, various exercises are used, including troubleshooting typical field problems. The course concludes with an examination which reviews the key elements of HMA construction.

Participants are required to bring a calculator.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Describe the purpose of project documents, pre-construction and pre-paving conferences, and cooperative communications on the job
- List the steps involved in preparing bases and existing pavements for overlays
- Select correct patching materials and placement techniques for pavement repair
- Define a proper HMA delivery process to the job site
- Explain the effect of the various components of a HMA paving machine on the finished mat
- Describe how to make a good longitudinal or transverse joint
- Identify QA techniques that apply to the HMA construction

TARGET AUDIENCE:

This course is designed for an audience that contains 50 percent contractor supervisory personnel and 50 percent Federal, State, and local highway agency construction engineers and field inspectors involved in the planning, construction, and review of HMA placement projects. It is important that such a mix of participants is present.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov
Technical Information: Michael Rafalowski • (202) 366-1571 • michael.rafalowski@fhwa.dot.gov

Earn Continuing Education Units (CEUs) with NHI courses.

COURSE NUMBER: FHWA-NHI-131044
COURSE TITLE: Hot-Mix Asphalt Production Facilities

This training course combines lectures and workshop sessions to provide participants with a working knowledge of hot-mix asphalt (HMA) production facilities. The training program is the result of a partnership between the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), and the HMA Industry. This course covers the entire HMA production facilities process and addresses the following topics: types of plants, drying and heating systems, emission control systems, feeders and conveyor systems, storage systems, plant operation and maintenance, quality control, and quality assurance. It concludes with an examination that emphasizes the key elements of HMA production facilities.

Participants are required to bring a calculator.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Define the roles and responsibilities of each person at the HMA production facility
- Identify the different types of plants, the main components of each, and how these components interact
- Describe the materials control process and its effect on the quality of the final product
- Differentiate between acceptable and non-acceptable methods of plant operation and maintenance
- Explain the operation of the exhaust fan and emission control systems and discuss their importance
- Identify potential problems that may occur during production and develop specific solutions to those problems

TARGET AUDIENCE:

This course is designed for project engineers, lead inspectors, plant supervisors, and all others involved with the HMA plant production. This course is designed for an audience that is a mix of contractor/producer personnel along with Federal, State, and local highway agency personnel.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov
Technical Information: Matthew Corrigan • (202) 366-1549 • matthew.corrigan@fhwa.dot.gov

How can we help? We want to assist you with your training needs. Please complete the 'How Can We Help' survey card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-131045
COURSE TITLE: Hot-Mix Asphalt Materials, Characteristics, and Control

This training course is the result of a partnership between the American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Association (FHWA), and hot-mix asphalt (HMA) industry. It was developed through the cooperative efforts of the Joint AASHTO/FHWA/Industry Committee on Asphalt. It combines lectures and problem-solving workshop sessions to provide participants with a working knowledge of hot-mix asphalt materials, their characteristics, and controls. The course focuses on two areas. The first provides technical information on the material properties of HMA, the processes used to measure these properties, and the effect that these properties have on the final, compacted pavement. The second involves achieving these properties in the field, with discussions on quality management and analyzing the impact of segregation and density on HMA pavement performance. The course concludes with an examination that reviews the key elements of HMA materials, characteristics, and control.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Identify the various and desirable properties of asphalt, aggregates, and mixtures
- Describe the proper procedures for handling, storing, sampling, and testing the materials
- Distinguish between desirable and undesirable results of tests used for controlling and analyzing the quality of HMA
- Select the processes and procedures that assure the quality of HMA pavements

TARGET AUDIENCE:

Contractor personnel at both the production facility and on the pavement lay down site, owner/agency personnel involved with the inspection of HMA pavement construction, and others directly involved in the production and construction of hot-mix asphalt pavements. The course is designed for an audience that is a mix of contractor personnel and Federal, State, and local highway agency personnel.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Matthew Corrigan • (202) 366-1549 • matthew.corrigan@fhwa.dot.gov

An FHWA Divisions and State Highway Agencies contact list is located on page 183.

COURSE NUMBER: FHWA-NHI-131050
COURSE TITLE: Asphalt Pavement Recycling Technologies

This course is the result of a joint effort between the Federal Highway Administration (FHWA), the Asphalt Recycling and Reclamation Association (ARRA), and the National Center for Asphalt Technology (NCAT). The course provides indepth technical knowledge of several recycling methods. It also offers training related to performance of recycled mixes, legislation/specification limits, selection of pavement for recycling and recycling strategies, economics of recycling, and structural design of recycled pavements. The ARRA publication "Basic Asphalt Recycling Manual" is used as a reference in this course.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Describe the various methods (hot and cold) of recycling pavements
- Determine when asphalt recycling is a viable pavement rehabilitation alternative
- Select the most appropriate asphalt recycling method or technique
- Identify materials and mix design for recycled pavements
- Specify equipment, construction methods, and QC/QA involved in recycling
- Demonstrate design methods for hot and cold recycled pavements

TARGET AUDIENCE:

This course is intended for State and local highway officials, administrators, pavement design engineers and technicians, and construction engineers and inspectors involved in the recycling of asphalt pavements.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Jason Harrington • (202) 366-1576 • jason.harrington@fhwa.dot.gov

Video conferencing technology can make instructor-led courses accessible to remote participants without changing the delivery format. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for more information.

COURSE NUMBER: FHWA-NHI-131054
COURSE TITLE: Pavement Preservation: The Preventive Maintenance Concept

This training course provides an introduction to the concept of pavement preventive maintenance, including a description of currently available tools and technology that make the implementation of a pavement preventive maintenance program feasible. Targeting an audience of upper management and policy makers in highway agencies, the course focuses on the information needed to develop or improve a preventive maintenance program and illustrates the steps that five states have taken in the development of their own preventive maintenance programs. Considerably less emphasis is given to actual pavement preventive maintenance techniques themselves, although an extensive listing of pertinent references is provided for each technique. This is the first in a series of four courses on the general subject of pavement preservation. The second course is FHWA-NHI-131058 Pavement Preservation: Selecting Pavements for Preventive Maintenance. The third and fourth courses are FHWA-NHI-131103 Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments and FHWA-NHI-131104 Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Identify the components of a pavement preventive maintenance (PPM) program
- Identify various pavement preservation techniques and materials and discuss the need for performance evaluation and pavement condition analysis
- Discuss the effects of various treatments on pavement performance and pavement condition indices
- Describe the importance of integrating pavement preservation into pavement management systems
- Explain cost/benefit concepts

TARGET AUDIENCE:

Upper- and mid-level highway agency professionals who are responsible for pavement preservation and management.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 266-1557 • tom.deddens@fhwa.dot.gov

Need an LTAP/TTAP contact? See the LTAP/TTAP contact list located on page 192.

COURSE NUMBER: FHWA-NHI-131058
COURSE TITLE: Pavement Preservation: Selecting Pavements for Preventive Maintenance

This short course focuses on selecting the right pavement for various preservation treatments by evaluating the merits of each treatment under various field conditions. This course will illustrate in detail the pavement evaluation, project selection, and material considerations for the various preventive maintenance applications. This is the second in a series of four courses on the general subject of pavement preservation. The first course is FHWA-NHI-131054 Pavement Preservation: The Preventive Maintenance Concept. The third and fourth courses will be FHWA-NHI-131103 Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments and FHWA-NHI-131104 Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Identify pavement conditions and other attributes that suggest whether preventive maintenance is appropriate
- Identify feasible treatments for the selected pavement
- Select the appropriate technique(s) and the appropriate timing for pavement preservation actions to extend the service life and retard the development of pavement distress
- Select a treatment based on consideration of life-cycle cost, improved performance, anticipated benefits, and other factors

TARGET AUDIENCE:

Field managers and practitioners for both the owner of the facilities and industry.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 366-1557 • tom.deddens@fhwa.dot.gov

You don't need to be a government agency to host a course. For instructions on how to host a course, please see page 7.

COURSE NUMBER: FHWA-NHI-131060
COURSE TITLE: Concrete Pavement Design Details and Construction Practices

This course provides participants with current guidelines on design and construction details for concrete pavements. Topics include important concrete pavement design details, including subgrade preparation, base selection, drainage design, thickness design, joint design, and shoulder characterization. The course explains how to select the proper details to enhance structural performance. Emphasis is given to jointed plain concrete pavements (JPCP), although the course includes instruction on jointed reinforced concrete pavements (JRCP) and continuously reinforced concrete pavements (CRCP).

OUTCOMES:

Upon completion of the course, participants will be able to:

- Recognize the effect of critical concrete pavement design details on overall concrete pavement performance
- Identify critical construction and maintenance practices that impact performance
- Select appropriate concrete pavement design details to enhance the performance of the pavement for a specific design condition

TARGET AUDIENCE:

Highway engineers who are responsible for the design and construction of better-performing, longer-lasting concrete pavements.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Mark Swanlund • (202) 366-1323 • mark.swanlund@fhwa.dot.gov

The On-Site Course Request Form (FWHA Form 1530) is located in the back of the catalog. Please make copies of the form for future use. You can also submit an electronic copy via the NHI Web site.

COURSE NUMBER: FHWA-NHI-131062
COURSE TITLE: Portland Cement Concrete Pavement Evaluation and Rehabilitation

This course will present state-of-the-practice and state-of-the-art techniques to identify the causes and patterns of different types of pavement distress, and techniques for rehabilitation selection, design, and construction that can be applied for those various types of distress.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Describe the typical behavior and performance of portland cement concrete (PCC) pavements
- Identify common PCC pavement distress types and be able to describe their mechanisms
- Describe key components of a thorough project-level evaluation
- Describe the variety of rehabilitation techniques available for PCC pavements
- Identify feasible rehabilitation techniques for existing PCC pavements
- Describe a process for selecting the preferred rehabilitation alternative for a given pavement

TARGET AUDIENCE:

FHWA, State, and local highway engineers in design, construction, and maintenance who are involved in the application of pavement rehabilitation techniques.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Mark Swanlund • (202) 366-1323 • mark.swanlund@fhwa.dot.gov

Video conferencing technology can make instructor-led courses accessible to remote participants without changing the delivery format. Instruction is delivered to a video camera and broadcast to video conferencing sites in areas close to participants, eliminating or greatly reducing the need for travel. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for more information.

COURSE NUMBER: FHWA-NHI-131063
COURSE TITLE: Hot-Mix Asphalt Pavement Evaluation and Rehabilitation

The course presents state-of-the-practice and state-of-the-art techniques to identify the causes and patterns of different types of pavement distress, and techniques for rehabilitation selection, design, and construction that can be applied to those various types of distress.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Describe typical behavior and performance of hot-mix asphalt (HMA) pavements
- Identify common types of HMA pavements distress and be able to describe their mechanisms
- Describe key components of a thorough project-level evaluation
- Describe the variety of rehabilitation techniques available and state their deficiencies
- Identify feasible rehabilitation techniques for HMA pavements exhibiting different distresses and conditions
- Develop the process for selecting the preferred rehabilitation alternative

TARGET AUDIENCE:

FHWA, State, and local highway engineers in design, construction, and maintenance who are involved in the application of pavement rehabilitation techniques.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Jason Harrington • (202) 366-1576 • jason.harrington@fhwa.dot.gov

Online courses consist of interactive instructional material in Web-based format that can be accessed from any computer with an Internet connection. For more information about online courses contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov.

COURSE NUMBER: FHWA-NHI-131064
COURSE TITLE: Introduction to Mechanistic Design for New and Rehabilitated Pavements

The sponsoring agency must provide 15 computers with the following minimum requirements: Intel Pentium Processor, 8 MB RAM, 50 MB hard disk space, CD-ROM drive, Windows 95/NT 4.0 (or later version), VGA graphics card, and Microsoft Excel 5.0 (or later version). Some of the requirements are flexible and are a function of the software typically used in the class. Additional details can be obtained from NHI.

This course presents the theory and application of the most comprehensive, up-to-date mechanistic design concepts. The general framework of the mechanistic-empirical design procedure and the individual components are discussed in detail. The course includes several hands-on workshops pertaining to materials characterization, structural response calculations, pavement performance prediction, and mechanistic-empirical pavement design. These workshops use real-world problems and exercises that enhance future application of this design methodology. Some of the workshops involve computations using public-domain pavement software and simple spreadsheet-based programs, and all are customized to each course based on project data provided by the host agency.

The course also discusses ongoing research and the effects that current research activities might have on the state of the practice. Throughout the class, particular emphasis is placed on the mechanistic-empirical design concepts used in the 2002 "Design Guide" (NCHRP Project 1-37A) and those that form the foundation of the Superpave pavement performance prediction models. The course will include detailed discussions about the data needs (materials, traffic, environment, etc.) for local/regional calibration of the 2002 "Design Guide" and what steps agencies should begin to take before the guide is adopted and used on a day-to-day basis for design.

OUTCOMES:

Upon completion of the course, participants will be able to:

- List advantages of using M-E design
- Calculate structural responses for flexible, rigid, and overlaid pavements
- List major inputs to a mechanistic design procedure and how to obtain them
- Explain sensitivity of layer thickness, material properties, joint spacing, etc., to structural responses
- Back calculate layer moduli for flexible pavements
- Explain how layer thickness, material properties, joint spacing, etc., affect pavement distresses
- Construct a flowchart/outline for M-E design of flexible, rigid, and overlaid pavements

TARGET AUDIENCE:

Pavement design engineers, materials engineers, and pavement management practitioners from government transportation agencies and the paving industry, and design consultants.

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Sam Tyson • (202) 366-1326 • sam.tyson@fhwa.dot.gov
Technical Information: Leslie Myers • (202) 366-1198 • leslie.myers@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-131100
COURSE TITLE: Pavement Smoothness: Use of Inertial Profiler Measurements for Construction Quality Control

This course presents a comprehensive overview of pavement smoothness and is designed for those directly involved in the use of inertial profilers and the application of the data obtained from inertial profilers. Participants will gain an understanding and knowledge of the different types of measurement techniques and indices used for reporting smoothness from profilers. The course is divided into units that introduce participants to the various components of roadway profiling, the operational requirements of most inertial profiling devices, and the analysis of data from most types of inertial profilers.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Describe the data collection process and operation of the inertial profilers as pavement profile measurement devices
- Identify the basic elements of the inertial profiler, which include the profiler's components, how the equipment works, the raw data is being collected, outputs from the data collection process, and the filtering of the raw data itself
- Explain how the inertial profiler output is used to establish various smoothness indices, including data processing techniques and computational procedures of different smoothness, or ride quality indices, identification of outliers, and factors that have an effect on the variability of the measurements
- Explain the relationships between profiler results and the equipment used, the measurement surface conditions, the measurement environment, the profiler operation, and the profiler operators themselves
- Explain how data acquisition and computational methods can affect computed indices, including the filtering process, sample intervals, record intervals, variability in collecting the data, and factors that have an effect on that variability

TARGET AUDIENCE:

This course is intended for an audience involved in the use of inertial profilers and in the application of the data obtained from inertial profilers. This primarily includes road profiler operators and individuals responsible for the data interpretation. Information may also be of interest to users of profiler output, engineers, and administrators.

FEE: $235 Per Participant

LENGTH: 1.5 Days (CEU: 0.9 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Mark Swanlund • (202) 366-1323 • mark.swanlund@fhwa.dot.gov

Want to read more about the International Association for Continuing Education and Training (IACET)? Go to the inside back cover.

COURSE NUMBER: FHWA-NHI-131103
COURSE TITLE: Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments

NEW COURSE

In preventive maintenance, the types of treatments and the timing of their applications provide highway agencies with a very broad range of life-extending treatment techniques and enable agencies to achieve their goals of enhancing pavement performance in a cost-effective and efficient manner while meeting their customers' need for an improved level of service. Obtaining optimum value from preventive maintenance treatments is only possible when preventive maintenance activities are fully linked to a pavement management system. There are many opportunities for such integration, from identifying and tracking the benefits of different treatments and timings to developing models that incorporate the effects of preventive maintenance. By using pavement management data for network-level analysis, an effective pavement strategy that utilizes reconstruction, rehabilitation, and preventive maintenance actions can be developed. When used at the project level, pavement management can assist the decision-maker in selecting the best pavement preservation option to be designed and applied.

This course targets those field personnel involved in constructing preventive maintenance treatments, including both buying agency's inspectors and the contractors' foremen and field crews. It contains modules on all of the categories of preventive maintenance treatments in widespread use today, focusing on the best practices for designing and constructing those treatments. It also addresses troubleshooting construction practices, so that participants can clearly identify the results of poor construction practices. This course is the third in a series of four courses on the general subject of pavement preservation.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Describe the benefits provided by preventive maintenance treatments
- Describe critical design factors for preventive maintenance techniques
- Describe the recommended procedures for the construction of the preventive maintenance techniques
- Identify critical post-construction/pre-opening inspection objectives

TARGET AUDIENCE:

Construction foremen and agency construction inspectors, up to and including middle managers. While it is aimed at those who have some familiarity with the equipment and materials used to construct effective preventive maintenance treatments, it should also be of value to those just starting out in the maintenance field.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 366-1557 • tom.deddens@fhwa.dot.gov

With NHI courses, learn new skills that can be quickly applied to your job.

COURSE NUMBER: FHWA-NHI-131104
COURSE TITLE: Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management

This course is intended to communicate to agencies the importance of integrating preventive maintenance activities into pavement management. Presently many pavement management systems identify the "worst" case pavements. These pavements typically have conditions ratings far below those intended to be addressed by preventative maintenance activities. This course identifies the process in which:

1. Management tools are adjusted to support a pavement preservation program
2. Pavement preservation activities are integrated into "enhanced" pavement management models
3. The use of these "enhanced" pavement management models to support decisions at the project, network, and systems levels

This course addresses integrating preventive maintenance with pavement management in a logical sequence beginning with project-level performance issues and ending with the use of network-level information in making strategic system-level decisions. The course materials identify steps that agencies must take in order to develop an action plan to improve their integration efforts.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Name several ways pavement management tools can support a pavement preservation program at the project, network, and strategic analysis levels
- List the reasons it is important for an agency to integrate pavement preservation into its pavement management activities
- Name the ways that pavement preservation techniques can be integrated into pavement management models
- Name some of the common obstacles to the successful integration of pavement preservation and pavement management programs and strategies for overcoming these obstacles

TARGET AUDIENCE:

This course is primarily intended for pavement management engineers, district (or regional) maintenance engineers, local agency engineers, maintenance management engineers, and planning and programming personnel.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 366-1557 • tom.deddens@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-131105
COURSE TITLE: Analysis of PMS Data for Engineering Applications

This course is a compilation of case studies from States that are using the years of condition data stored in their pavement management systems (PMS) to track the real-life performance of pavements, evaluate and analyze pavement overlay design, track performance of materials and construction, incorporate preventive maintenance actions, and evaluate maintenance or pavement performance.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Analyze their agency's need to either add additional data to their PMS or electronically link databases so that engineering analysis can be done
- Describe the range of applications and the processes needed to do engineering analysis

TARGET AUDIENCE:

Design engineers, materials engineers, maintenance engineers, QA/QC staff, and pavement management staff.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Sonya Hill • (202) 366-1337 • sonya.hill@fhwa.dot.gov

Web conferencing allows individuals to conduct live interactive presentations, demonstrations, meetings, classes, or training sessions via the Internet while simultaneously communicating through an audio conference bridge. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for program assistance.

COURSE NUMBER: FHWA-NHI-131106
COURSE TITLE: Transportation Asset Management

Transportation asset management is a strategic approach to managing physical transportation infrastructure. This introductory course covers the principles, concepts, components, techniques, and benefits of asset management. The materials are based on the AASHTO's "Transportation Asset Management Guide" that was produced under the National Cooperative Highway Research Program (NCHRP) Project 20-24(11).

This course supports, complements, and builds familiarity with using the guide and illustrates asset management "best practices" in key functions of a transportation agency's resource allocation and utilization: policy development, planning and programming, program delivery, operations, and use of information and analytic tools.

A self-assessment process is provided for transportation agencies to benchmark current asset management practices and identify potential areas for further enhancement and implementation.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Understand the fundamentals of transportation asset management
- Appreciate why using transportation asset management is important to their agencies
- Begin to visualize how the framework and principles of transportation asset management relate and fit into their agencies' business processes
- Use the self-assessment guide to assess and benchmark their agencies' transportation-asset-management program
- Begin to develop transportation-asset-management goals and objectives for their agencies

TARGET AUDIENCE:

Senior-level and mid-level managers from State departments of transportation and other transportation agencies, who typically have the responsibility for decision-making in one or more areas addressed by transportation asset management. A 35-minute module at the beginning of the course provides a conscise overview of asset management that is suitable for executives. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 40

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COURSE NUMBER: FHWA-NHI-131107
COURSE TITLE: Principles and Practices for Enhanced Maintenance Management Systems

This course is an introduction to the methods and practices used in enhanced maintenance management systems (MMS) to effectively maintain and operate a highway network. It provides participants with the principles and practices of using MMS and illustrates effective maintenance and operation of a highway network. Participants are provided with activities and assignments specific to using MMS.

The course materials rely heavily on the recently developed AASHTO "Guidelines for Maintenance Management Systems, the Transportation Asset Management Guide," along with several other recent publications on this topic. The course materials will be supplemented with examples from State and local highway agencies as much as possible to illustrate the use of the principles in transportation agencies.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Compare and contrast a first generation MMS with an enhanced MMS of the 21st century
- Describe the terms "outcome-based" and performance-based" and how they pertain to an enhanced MMS
- Describe the use of service levels to support the programming and budgeting activities incorporated into a MMS
- Identify the types of systems that should be integrated with a MMS and provide several examples of the types of data that should interface between each system
- List the potential benefits to be realized by fully integrating an enhanced MMS
- Identify several steps that will advance the agency's current maintenance management practices now and in the future

TARGET AUDIENCE:

The target audience for this course includes State and local maintenance engineers, maintenance supervisors, asset managers, and their industry counterparts. This course is specifically for individuals who are responsible for directing and managing maintenance operations and budgets, maintenance project and treatment selection, and/or the monitoring of system conditions.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 40

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